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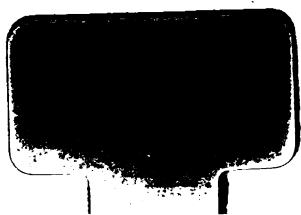
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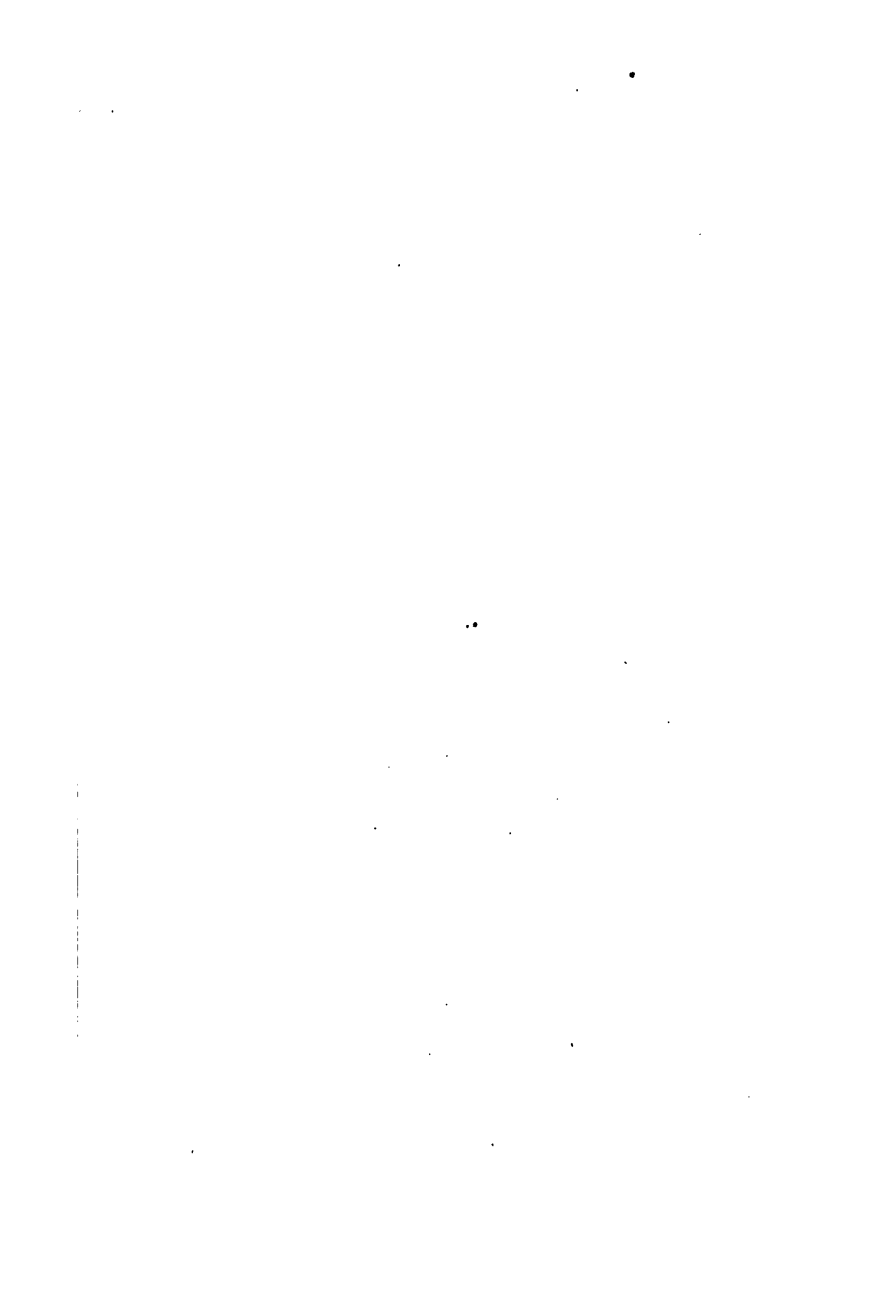
BRITISH FERNS.

191. c.

II.







A
PLAIN AND EASY ACCOUNT
OF
THE BRITISH FERNS.

WHEREIN

EACH SPECIES IS PARTICULARLY DESCRIBED UNDER ITS
RESPECTIVE GENUS, AND THE CHARACTERISTICS
OF THOSE GENERA GIVEN IN WORDS
OF COMMON USE.

WITH

A GLOSSARY OF TECHNICAL TERMS,
SERVING AS A KEY TO LARGER TREATISES.

2. B

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P R E F A C E.

THE present Outline of our BRITISH FERNS is mainly indebted to the following works, though I have not considered myself bound implicitly to abide by them. While freely using their assistance therefore, I yet do not claim their authority.

‘An Analysis of the British Ferns.’ By George Francis, F.L.S.; 4th edition. London: Simpkin, Marshall, and Co., Stationers’-hall-Court, 1850. The arrangement of the genera herein is simple, easy, satisfactory; and well and clearly delineated in the respective figures; the definitions and accounts of each species are ample and minute; a slight record of the natural

habitats (or localities where to be found) of each is added; the whole is an excellent little instructor to those who already understand, or can elsewhere make themselves masters of the technical terms of Botany, employed in this as also in the other books mentioned.¹

Much the same order is adopted in Sowerby's 'English Botany,' Single No. Class XXIV, Cryptogamia, Order I, Filices Ferns, pp. 29, pl. 43.—The definitions here also are useful, though less elaborated; the plates beautifully executed, and often, but not always, very faithful. To a beginner, therefore, it is a welcome guide, as actually presenting to the eye what it might be more difficult to distinguish by mere verbal descriptions, especially when conveyed in scientific expressions. The

¹ I have now appended a Glossary, explanatory of the principal technical and other scientific terms occurring in works on Pteridology.

classification employed by these two authors, and sanctioned more or less by others, is chiefly, though not absolutely, pursued in this Outline.

‘A Handbook of British Ferns.’ By Thomas Moore, F.L.S. London: Groombridge, Paternoster-row, 1848; and Pamplin, Frith-street, Soho.—This is yet fuller, and more particular, and gives the proper mode of cultivation in every case. Unfortunately, though in other respects an admirable little work, a more complicated plan of arrangement and occasional change of nomenclature² render it better fitted

² “A change of names,” well remarks Francis, “is always perplexing, and in this case unnecessary. I cannot admit either that the amount of evil is very greatly less in re-establishing an obsolete nomenclature, than in coining a new one. As to the mere intention assigned by some of restoring their due honour to ancient botanists, it is a principle good in theory, but cannot be carried out; and it would be of much injury to botany if it could, as we should be soon overwhelmed with terms now forgotten, which are generally less appropriate and significant than the more modern appellations.” Had, indeed, the present alterations been from *Lastrea*, for

for those who already know somewhat on the subject, than for the entire novice.

‘A Popular History of the British Ferns.’ By the same. London : Reeve & Benham, Henrietta Street, Covent-Garden, 1851. A more elementary book, and, like Sowerby’s, with coloured plates, instead of, as in the former and in Francis, mere woodcuts or etchings. The same complicated classification, &c. ; of considerable service,

example, the mere unmeaning derivative from *M. Delastre*, and the vague *Polystichum*, equally applicable to half a dozen other species, to the more definite and descriptive *Aspidium*, there might have been some show of reason therein ; but surely not for the reverse, from good to bad. So, if *Quercina* were substituted for *Aquilina*, as regards *Pteris*, from its greater resemblance to an oak than an eagle, objectionable as such innovations must be, it would yet bear a face ; but what sense could be extracted from Newman’s proposed *Eupteris* ? So of the system of classification according to the venation, the same writer says, “ I do not find it either correct, convenient, or practicable.” See his ‘Observations,’ p. vii, ed. 4th. And surely, while so easy, simple, and decided an arrangement can be gained from the fructification of each genus, it were somewhat superfluous to resort to any other.

however, as containing a more complete and detailed list of habitats.

In the following pages the subject has been more simplified than in any of the foregoing treatises—(all of which, however, are strongly to be recommended to one who would study it fully); the attempt having been made to describe each species in words of common use, technical language being avoided. I must only beg to be excused in designating the different parts of the Ferns by the names the corresponding parts of a tree would bear: the main stalk as a “stem,” the lateral shoots therefrom as “branches” or “boughs;” the foliage on the latter, whether formed into a distinct and separate member, or joined to them in its whole width, as “leaves;” &c., critically incorrect as the application of such terms may be.

E. B.

INTRODUCTION.

AMONG our indigenous plants there are few that more invite or reward our care, than the tribe of Ferns. The commoner, but not therefore less striking, kinds are easily transplanted at any season. They require but ordinary attention to succeed, and that even although in situations where flowers would fail for want of sun. Give them but shade and shelter, which however are not indispensable, and they are content. They are suited also for our companions in the drawing-room during the winter, as they thrive under glass, and demand neither regular watering there, nor change of air. They are very graceful in their feathery form, and elegant in their waving varieties of leaf; and, when once shooting up in the spring, they continue in verdure to live down whole successions of their gaudier rivals; yielding at length only to the

frosts of late autumn, and many persisting even then, especially in protected positions. And during this time they are a source of interest in their fresh and fresh development and growth.

At first we have a flattish or roundish crosier just peeping above its parent soil; then ere long we see the head thicken in the inner fold, and gradually throw out little wings below (themselves in the more composite sorts being similarly curled up at their ends, and afterwards so evolving themselves), which next it leaves behind, slowly unrolling itself upwards from them; then another pair, and then the higher progress again; and so on, till the complete frond (or separate shoot with its branches, leaves, &c.) stands forth in its full youthful shape, to be expanded more widely day by day up to its perfect form.

Nor is it a slight recommendation to the study and cultivation of this tribe, that all our native species may be comprised in about five and forty, the genera being put at sixteen; so that we have an easy limit both to our inquiries and our acquisition. They have the advantage also of being perennials. Nor do

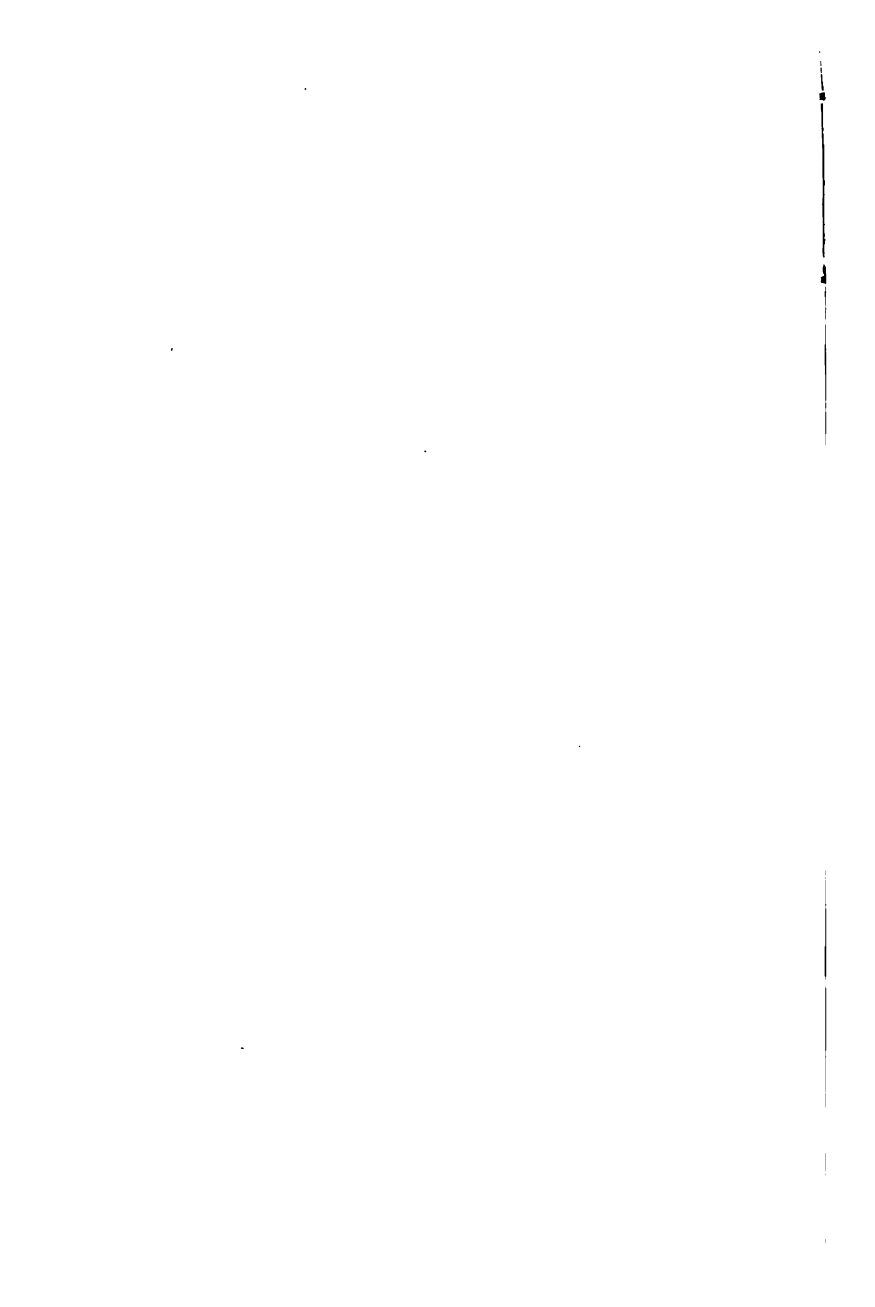
they desire manure; the proper soil for them, however, where it is procurable, is a mixture of peat earth and sand, assisted occasionally with decayed leaves. For water they are generally thankful; and the nearer, of course, in every case that we can supply their natural conditions the better.

The arrangement of this tribe is according to their fructification (the seed-vessels, their disposition, and appendages), and this, therefore, is the first thing to be looked to for discovering the genus; and for this purpose, and in order to become fully acquainted with the beauties, and discriminate clearly the minuter features, of our subject, it were advisable to provide one's self with a magnifying lens; a pocket "Coddington," for example, which may be had for about a crown. In deciding afterwards on the individual species, which a little practice can alone teach, it must, however, be borne in mind, that though each may have one ordinary or typical form, yet, from soil, situation, and other causes, variations will sometimes occur; nor do the very young plants always at first present all the complete points of their respective characters; how-

ever still their identity may be traced through these occasional modifications.

To proceed then to their fructification. The dust-like and almost invisible seeds, or spores, of Ferns are contained in little cases, or thecæ, mostly of a roundish form; which are themselves nearly surrounded (except in the instances of *Osmunda*, *Botrychium*, and *Ophioglossum*, where it is wanting) by a jointed ring, horizontal in *Trichomanes* and *Hymenophyllum*, vertical in the rest; the elasticity of which eventually bursts open the thecæ, and scatters the spores when mature. The links of this ring, and its operation of breaking, are plainly seen through the lens above recommended. These thecæ are, in the majority of the genera, arranged on the backs of the leaves, in linear, oblong, or circular, clusters, called *Sori*; either having, or not having, above the mass, a thin, skin-like, integument (*Indusium*), generally of the same shape as that mass itself; at first covering and inclosing the young seed-cases, afterwards disrupted at its margin, or cast off. In some instances, however, the plant itself is moreover divided into barren and fertile fronds, either

of a distinctly different, or of the same, form, only that the fertile are a trifle narrower and less expanded, and come out later. They also, and the fructification otherwise, sometimes do not make their appearance at all after transplantation, until the plant has become fully settled in its new home. According to these differences is the classification. By the term "evergreen" must be understood all that in sheltered situations retain their leaves during the winter, however in most instances out of doors affected in their colour by frost, &c.



INDEX TO THE GENERA.

* * * As every formal British Fern comes under one or other of these Heads, it is only necessary in any case to look to its fructification, and then, by casting the eye down the following list, the genus to which it belongs will be seen at once: the individual species, name, &c., will afterwards be found by referring to the description given under that genus.

NON-INDUSIATE.

¶ Sori on the back, in lines; back scaly.

Genus GRAMMITIS.

Page 19.

¶ Sori on the back, in round masses, perfectly naked.

Genus POLYPODIUM.

Page 20.

¶ Sori circular, beneath the recurved margin of leaf.

Genus CRYPTOGRAMMA.

Page 23.

- ¶ Sori contained in little two-valved vessels which spring from the branch near the stem.

Genus HYMENOPHYLLUM.

Page 24.

- ¶ Sori in entire cups, springing from the branch, but not always next the stem.

Genus TRICHOMANES.

Page 26.

- ¶ Sori naked, forming a fertile, branched, composite spike, on the upper part of a barren leafy frond.

Genus OSMUNDA.

Page 27.

- ¶ Sori naked, on a separate branched spike.

Genus BOTRYCHIUM.

Page 28.

- ¶ Sori naked, on a separate simple spike.

Genus OPHIOGLOSSUM.

Page 30.

INDUSIATE;

OR WITH A DISTINCT INDUSIUM BELONGING
THERETO.

- ¶ Sori on the back, in round masses. Indusium round like a shield, and fixed in centre only, as in the family of Lonchitis; or appearing somewhat like a kidney from having a deep connecting indentation from the centre to the extremity, as in the rest.

Genus ASPIDIUM.

Page 31.

- ¶ Sori on the back, in round masses. Indusium bladder-shaped, attached under the sori by one side, eventually bent back, or thrown off entirely.

Genus CISTOPTERIS.

Page 39.

- ¶ Sori on the back, in round masses. Indusium attached under them, and splitting above into hair-like segments, or fine threads.

Genus WOODSIA.

Page 42.

- ¶ Sori oval, on the inner surface of the Indusium.
Indusium a projected continuation of the
bleached reflexed margin of the leaf itself.

Genus ADIANTUM.

Page 43.

- ¶ Sori on the back, in oblique lines. Indusium
attached on outer side.

Genus ASPLENIUM.

Page 44.

- ¶ Sori on the back, in twin oblique lines.
Indusia attached on outer side, and lapping
one over the other on inner.

Genus SCOLOPENDRIUM.

Page 51.

- ¶ Sori on the back, in two longitudinal lines
by the midrib. Indusia attached on outer
side, but not connected with each other.

Genus BLECHNUM.

Page 52.

- ¶ Sori on the back, forming a continuous line
along the margin. Indusium attached to
the slightly recurved edge of leaf.

Genus PTERIS.

Page 54.

BRITISH FERNS.

NON-INDUSIATE,

OR WITHOUT ANY DISTINCT INDUSIUM
BELONGING THERETO.

¶ Sori on the back, in lines; back scaly.

Genus GRAMMITIS.

GRAMMITIS ^ℓCATERACH. (*Scaly Spleenwort.*)

A low, broadish, plant, from 3 to 6 inches in length, having no main stem, with branches, &c., but mere, long, leathery, shoots, cut and rounded, as it were, into a kind of oblong leaves on each side, fringed at first with white on their edges; the underside then whitish also, intermixed with brown, but shortly becoming coloured like rusty iron: clothed with chaffy scales concealing the sori. Root tufted. Growing in circular masses. Evergreen. Common on walls, in the West of England especially. Takes pretty well; likes watering; but shrivels under excessive heat, sunshine, and frost.

¶ Sori on the back, in round masses, perfectly naked.

Genus POLYPODIUM.

POLYPODIUM VULGARE. (*Common Polypody.*)

Root fibrous and creeping. From 6 to 12 inches. Evergreen. Sori prominent, yellow, in two series equidistant from centre and margin. To be met with everywhere, on trees and walls, hanging down in tresses, with plain, long, narrow, smooth, leaves only, and not branches, on its stem. Takes well, and easily. Rarer varieties exist, wherein the leaves are forked at top; or notched all round; or deeply incised, the sides of each such incision being notched.

PHEGopteris. (*Mountain or Beech Polypody.*) From 6 to 18 inches. Pale green, having branches, with simple, rounded, oblong, leaves, fringed with hair, on the upper portion of its long slender stem; the lowest branches inclining downwards. Sori marginal. Growing in masses. Deciduous. In rocky, sheltered, damp, places, and stony woods, chiefly in the North. Requires shade and moisture about

its fronds and roots. Branches on the upper part of frond uniting together at their base, and connected with stem by their whole breadth of leaf.

DRYOPTERIS. (*Oak or Tender Three-branched Polypody.*) From 6 to 12 inches. More composite than the preceding, the larger leaves being secondary branches; its stem running into three, as it were, at a bent angle in the lowest branches, the leader forming its continuation. Branches and frond drooping. Leaves notched, but not hairy, on margin. Young shoots show like three tiny balls. Growing in masses. Deciduous. Same localities. Sori marginal. Requires same conditions as the last.

CALCAREUM. (*Lime or Rigid Three-branched Polypody.*) From 6 to 12 inches. In habit and general characters much resembling the preceding, only stem rather stouter, frond more rigid and erect, and colour darker; the underside of leaf having small, yellow, shining, glands thereon, yielding in the young fronds a pleasant but

short-lived perfume when drawn across the nose. Takes well. Oftener southward. Deciduous.

The latter two very ornamental and singular in their full top springing from so slender a stem, as though they were diminutive trees. The drawback to the genus, and to *Aspidium Thelypteris* below, is, that the roots, creeping along horizontally underground, are not only somewhat more difficult of removal than where they are tufted, but throw out their fronds more arbitrarily, here and there, apart from the site originally chosen for them. They, however, hereby propagate more extensively.

ALPESTRE. (*Alpine Polypody.*)

From 12 to 18 inches. Short, creeping, root. Growing in masses. A narrow frond, tapering at both ends, having branches, bearing pointed, narrow, leaves, deeply divided throughout. Sori towards top of frond in each division of the leaf, thus forming two rows along the whole. Deciduous. A peculiarly elegant, graceful, and lovely, plant, overlooked in this country until within the last year or two, in consequence of its near resemblance to *Asple-*

nium Filix Fœmina, for which it was mistaken until examined; when of course found to differ from it in all the characteristics of the respective genera. Probably not difficult of cultivation, as growing plentifully, though tender. Only yet known in one or two places in the Highlands of Scotland.

¶ Sori circular, beneath the recurved margin of leaf.

Genus CRYPTOGRAMMA.

CRYPTOGRAMMA CRISPA. (*Rock-brake, or Parsley Fern.*) Fertile fronds from 3 to 8 inches. Barren, more numerous, and rather shorter. Fancifully, and perhaps with some little truth, compared to a bunch of much divided and crisped parsley. Root tufted. Growing in masses. Very delicate and composite; having on its larger branches secondary ones with, in the barren, little, stalked, thin, indented, and somewhat wedge-shaped, leaves, branches and leaves often alternate; in the fertile, oblong-oval,

stalked, and alternate. Sori distinct, though soon uniting into a line, and partially concealed by the reflexed margins of the leaf, which almost meet behind. Early deciduous. Rocks, stones, and walls, in mountainous districts of the North. Not difficult of cultivation. Tender, pretty, and graceful.

- ¶ Sori contained in little two-valved vessels, which spring from the branch near the stem.

Genus HYMENOPHYLLUM.

HYMENOPHYLLUM TUNBRIDGENSE. (*Tunbridge Filmy Fern.*) Root creeping, with minute, twisted, and entangled, fibres. Growing up therefrom irregularly, but not far asunder. From 1 to 3 inches. The tiny branches from the hair-like stem are forked into separate lines of dull green, semi-transparent, closely reticulated, undivided, prickly, leaves; oftentimes, however, split in two at top; nearly resembling in appearance of texture some kinds of seaweed. The fibres of the root form them-

selves into a thick matted mass with the mosses, &c., among which they live. The seed-cup, where existing, takes the place of the upper leaf nearest to the stem, and is composed of two roundish valves, folding one over the other, and is sharply notched at top, and not stalked. Evergreen. Rather uncommon. Parts of West, Kent, the Lakes, Wales, and elsewhere. On the surface of damp rocks amid their parasites. Difficult of cultivation. Requires a glass, and succeeds best when placed thereunder with its aggregation of root, soil, &c., on porous stone, covered with a little sand, in order to retain the moisture, kept in the shade, and *frequently watered*. Elegant and delicate.

WILSONI. (*Northern or Wilson's Filmy Fern*.) Like the preceding, but taller, and in proportion narrower. Stem curved above, and branches inclining downwards. From 3 to 4 inches. When in bearing, cups turning in one direction and leaves in the other. Seed-vessel larger, more rounded valves, stalked, with smooth lips above, somewhat like the end of a

duck's bill, instead of being cut off and notched. Same situation and localities, though a trifle more common. Treatment as before.

¶ Sori in entire cups, springing from the branch, but not always next the stem.

Genus TRICHOMANES.

TRICHOMANES BREVISETUM. (*Bristle Fern.*)

From 6 to 12 inches. Of the character, texture, and appearance, of the preceding genus, but larger in every part, and more composite, so that the secondary branches with their leaves here might be considered as corresponding to their simple ones; only leaves not prickly, wider, and more rounded. Stem with a thin, semi-transparent, border, like its shadow, on each side. Root fibrous, but thicker, and less spreading. Growing up at intervals therefrom, but more solitarily. Seed-cup not confined to occupy the place of the leaf nearest the stem; entire, of a longer and more equable shape, like the letter U rather drawn out, having a spike or hair projecting from its centre.

The variety *Andrewsii* is narrower, longer, and more drooping. Only in Ireland. Requires a glass. Rather easier of cultivation. The conditions of success as before; a close atmosphere, shady moderate warmth, *constant* but not stagnant *moisture*, and a porous substance for the roots to cling to. A very lovely plant, and, when wet, perhaps the most beautiful of the whole tribe.

- ¶ Sori naked, forming a fertile, branched, composite, spike, on the upper part of a barren, leafy, frond.

Genus OSMUNDA.

OSMUNDA REGALIS. (*Flowering Fern.*) Root tufted. From 2 to 4 feet in dry, from 8 to 12 feet in damp, sheltered, situations. Fronds springing up rather under one another. Branches far apart, and generally opposite. Leaves simple, undivided, smooth, stalked, narrow, oblong, with more or less of a protuberance at their base; at first very tender, and of a reddish colour, changing to a dull green, and slightly

jagged throughout. Fertile spike ordinarily the termination of the stem, and above the leaved branches belonging to it, though sometimes the sori are produced on the branches themselves, or even on the edge of a leaf. Fertile spikes fewer than branches. Each stalked and oblong bunch of the spike composed of a succession of circular clusters of thecæ, green at first, ripening into brown. Deciduous. Comes out early. Common in marshes and damp situations. Stem eventually tough and wiry. Easy of cultivation. Best transplanted large. Hardy. Though wanting in the graceful and elegant undulations and variations of leaf, which are the peculiar beauty of the tribe, yet justly admired for the contrast it affords by its fine bold appearance.

¶ Sori naked on a separate, branched, spike.

Genus BOTRYCHIUM.

BOTRYCHIUM LUNARIA. (*Common Moonwort.*)

Root of thick, smooth, yellow, fibres; fertile

spike, from 3 to 6 inches. Single barren frond shorter. Growing solitarily. A very singular-looking plant; stem hollow and succulent, throwing off at about a third upward a single, barren, branch, having on each side very peculiar stalked leaves (somewhat like the sliding wooden handscreens offered for sale in the streets of the metropolis rather more than half unfurled), deeply notched throughout to their base. The stem itself, continuing upward, near the top has other very short branches, on which, or on the offshoots from which, or on the spike itself, are the clusters of thecæ, disposed in two regular series. Variations from this arrangement of fructification are sometimes found, as in the last genus. Early deciduous. Not uncommon on open heaths and pastures, where the soil is peaty, but not very wet. Difficult of cultivation. Prefers being kept moderately dry, cool at root, and with fresh air, rich vegetable soil, and root to be transplanted in spring, while yet dormant. Curious, but of no particular interest or beauty. This and the next, alone of all, grow up straight, and not curled inward

crozier-fashion. The Botrychium or Moonwort is that which was formerly reputed to do such wonders, if only gathered by moonlight, &c.

¶ Sori naked on a separate, simple, spike.

Genus OPHIOGLOSSUM.

OPHIOGLOSSUM VULGATUM. (*Common Adder's Tongue.*) Root of a few, short, yellow, smooth, fibres, running horizontally. From 3 to 12 inches. Growing solitarily. A smooth, round, hollow, succulent, stem, bearing on the upper part a simple spike, issuing from a broad, smooth, oblong-oval, concave, undivided, and unnotched, leaf; embedding on either side at top a single row of yellow thecæ: the whole therefore somewhat in appearance of the character of the Arum, or Lord and Lady. Leaf occasionally split at top: or two spikes found instead of only one. Growing up straight, and not curled inward, like the last. Not uncommon in moist pastures and meadows. Early deciduous. Tolerably easy of cultivation. Of no comparative interest.

INDUSIATE,

OR WITH A DISTINCT INDUSIUM BELONGING
THERE TO.

- ¶ Sori on the back in round masses. Indusium round like a shield, and fixed in centre only, as in the family of *Lonchitis*; or appearing somewhat like a kidney from having a deep connecting indentation from the centre to the extremity, as in the rest.

Genus ASPIDIUM.

Root tufted in all but *Thelypteris*.

ASPIDIUM LONCHITIS. (*Holly, or Rough Alpine, Shield-Fern.*) The simplest form of the genus. From 6 to 18 inches. A main stem, with stalked, prickly, undivided, somewhat crescent-shaped, leaves, like those of the holly, nearly to its base; widest in the middle, and tapering to both ends. Sori towards centre, on upper portion of the frond. Very rigid. Growing in round masses, and inclining downwards. Evergreen. Rare.

Mountains of North, Scotland and Wales. Very difficult of cultivation, except in a frame. Bold and sharp in its outline, but of no particular beauty.

LOBATUM. (*Close-leaved Prickly Shield-Fern.*) From 1 to 2 feet. Growing in circular masses. A larger, wider, plant, and more composite. Form of frond nearly equable, till tapering towards the top. Branches shortish, leaves hardly stalked, stiff, sharp, angular, prickly, and indented, with a kind of a slight elbow projecting from their base furthest from the stem: leaf next the stem largest; all a little convex. Sori towards centre. Evergreen. Common. Easy of cultivation. Hardy and ornamental.

ACULEATUM. (*Common Prickly Shield-Fern.*) From 1 to 2 feet. Growing in circular masses. Distinguished from the preceding by form of frond being more triangular, leaves stalked, closer upon the stem, broader like the frond itself; elbow more decided. Evergreen. Common. Easy of cultivation. Hardy and ornamental.

————— ANGULARE. (*Angular Prickly Shield-Fern.*) From 2 to 4 feet. Resembling the last, only more delicate. Leaves thinner, blunter, flatter, rounder, less angular, broader in proportion to length, and soft instead of rigid. Frond wider and drooping. Bristles shorter, and at first sight more frequent from less convexity of leaf. Common. Evergreen. Easy of cultivation. Hardy and ornamental. Leaf not running to so sharp an end. Sometimes very deeply and thickly bristled throughout.

These dark green, but oftentimes, especially when exposed, assuming a healthy yellow tint. They would seem to form a regular series; the simple rigid *Lonchitis* modified as it were in the branches of the *Lobatum*, that again slightly varied into *Aculeatum*, and so at length softened into the graceful *Angulare*. The latter three sometimes run so much into each other, that authorities are at a difference about them.

————— THELYPTERIS. (*Marsh Shield-Fern.*) From 6 to 18 inches. Yellowish green. Fronds springing up here and there, in masses from its creeping root; rather erect, though thin and delicate, and, where under

trees, stooping forward to the light. Leaves, on the branches, simple, oblong, smooth on edges, very thin, inclining to pointed, and having a sharp angular appearance, as if cut, from being rather rolled backward in margin. The young partially-developed heads looking like a bundle of soft curled ends. Barren fronds widest and shortest. The fertile come out later, and then only when long transplanted. A marsh plant, not uncommon in boggy places. Rather difficult to remove, on account of its fibrous and straggling root, but taking well if duly supplied with moisture. Sori marginal. Deciduous.

OREOPTERIS. (*Mountain or Heath Shield-Fern.*) From 2 to 3 feet. Growing in masses. Branches nearly to the bottom, and tapering both ways. Leaves smooth, simple, undivided, and unnotched, delicate green; at first turned backward in margin, so that, as in the last, the head before evolved seems like a knot of twisted points, afterwards becoming only rather convex throughout, oblong, and blunt-rounded

Beneath the leaves are small, yellow, shining, glands, emitting, like those of *Polypodium Calcareum*, a pleasant flavour, when drawn through the hand. Not erect. Sori marginal. Deciduous. Somewhat corresponding with the last, as if that were the female, and this the male, plant. More robust, leaves thicker and larger. Not uncommon on mountainous heaths. Difficult of cultivation; and of no particular interest, nor, excepting collocation of sori, beauty. Not hardy. Comes out very late, and very early becomes faded and brown.

FILIX MAS. (*Male Shield-Fern.*)

From 3 to 4 feet. Growing in circular masses. Branches alternate. Frond wide and spreading; branches often low down. Stem very scaly below. Rounded, and no angularity anywhere. Leaves oblong, dull-green; edges slightly notched. Sori towards centre, on upper half of frond and lower half of leaf. Rather variable in form. Deciduous. Easy of cultivation, and hardy. One of the commonest, to be met with everywhere. From its feathery character

and general elegance to be strongly recommended.

CRISTATUM. (*Crested Shield-Fern.*)

From 1 to 2 feet. Pale green. Growing in tufts. Frond erect and rigid. Branches far apart. Stem thick. Leaves broad, stout, and indented; oblong-rounded, and with slight bristles. Frond oblong and narrow, stem but slightly scaly, and having no branches for about one-third below. When compared with the last, like a short, fat, robust man. Sori running higher on the leaf. Deciduous. Very rare. Only on a few boggy heaths. Requires turfy peat soil, and moisture.

RIGIDUM. (*Rigid Shield-Fern.*) From 1 to 2 feet. Growing in masses. Rigid and erect, having on upper surface of leaves small glands scented. Very composite. Dull yellowish green. Leaves on the branches round-ended, not spinous, apart, oblong, not angularly formed, but yet a perfect succession of fine incisions, points, and teeth. Sori in rows towards centre, chiefly on upper half of frond, and eventually

uniting. Deciduous. Very rare. Confined to a few mountains in the North. May be cultivated in a shady peat border, if not kept too wet, or too deeply set in ; but becomes less rigid. The most delicate and lightest of the whole genus. Branches alternate. Leaves nearly equable, and the lower or under equisized with corresponding upper.

DILATATUM. (*Broad prickly-toothed Shield-Fern.*) From 1 to 5 feet. Dark green. Growing circularly. Frond triangular: generally but few fronds from one root, and drooping asunder, arched. Leaves very convex, folding back, and apart; oblong, divided, and much toothed; roundish at ends. In one variety, however, if, as the name would seem to imply, that be not the original typical form, expanded and overlapping each other. The largest leaves, those especially on the under side of the lowest branch, becoming secondary branches. Branches apart. Stem bare of boughs at bottom. Sori abundant and distinct, in a row on each side of mid-

rib, and sometimes appearing on the yet undeveloped head. Deciduous. Common in moist woods. Easy of cultivation, and peculiarly graceful and ornamental. Goes off late in the season. Branches mainly opposite. Leaves slightly stalked, more or less ; the lower larger than upper.

————— RECURVUM. (*Triangular prickly-toothed Shield-Fern.*) From 1 to 2 feet. Growing in masses circularly. Shape of leaves as the last, only more diminutive in every part, and margins curled inwards, and so concave instead. Secondary branches more decidedly stalked. Evergreen. Easy of cultivation. Not common. West of England (?), Ireland. Pretty and ornamental.

————— SPINULOSUM. (*Lesser prickly-toothed Shield-Fern.*) From 1 to 3 feet. Growing in masses and together. Yellowish green. Moderately erect. Sometimes confounded with Dilatatum, especially when dried ; but when alive, a less succulent-looking plant, and, besides the differences above of size, growth, and colour, frond more equable ;

sori larger; leaves more running to a point, less convex, narrower, thinner, more bristled, more angular, not smooth on surface, but furrowed with lines of midrib, &c.; not soft, but rigid. Deciduous. Common. Easy of cultivation, though not taking quite so freely as *Dilatatum*. Elegant and graceful.

- ¶ Sori on the back in round masses. Indusium bladder-shaped, attached under the Sori by one side, eventually bent back, or thrown off entirely.

Genus CISTOPTERIS.

CISTOPTERIS FRAGILIS. (*Brittle Bladder Fern.*)

From 6 to 12 inches. Root tufted. Growing in masses. A very lovely little composite plant, extremely delicate, yet hardy, coming out early, and going off late, and throwing out successions of fronds perpetually. Branched, with stalked, rather pointed, tapering, much divided and toothed, leaves, set very wide apart, as are the branches. Sori scattered, numerous, and appearing on the undeveloped head. De-

ciduous. Common (especially in the West of England) in hedges, banks, walls, &c. Easy of cultivation, and takes most freely. Rather variable in form. Very ornamental. It assumes sometimes a larger and more oblong frond, with leaves running to a sharper point; sori less prominent; and is then called *Angustata*. Or a smaller, frond and leaves blunter, rounder, and less divided; sori nearer margin; and is then *Dentata*. The only drawback to this elegant little thing is, that under cultivation it is subject to a yellow mildew. The below must be considered rather as varieties than different species, as to character, culture, &c.

ALPINA. (*Alpine Bladder Fern.*)

Usually from 4 to 6 inches, but occasionally higher. Root tufted. Growing in masses. More deeply divided, rounder, and less pointed, in leaf, branches shorter, and more obtuse. Sori towards margin. Very rare. Said to exist at Low Layton in Essex, and in Derbyshire and Yorkshire. Pretty, but not quite so graceful in form.

MONTANA. (*Mountain Bladder Fern.*)

From 4 to 8 inches. Creeping root. Growing in masses. Frond triangular; the lowest branches being much the largest, and having secondary branches on their underside, that next the stem being the greatest, and at some distance from it, and becoming nearer sized with that above on each branch upward gradually. Branches on upper third only of stem. Sori scattered. Extremely rare. Only in a few places in Scotland. Very elegant.

DICKIEANA. From 4 to 6 inches.

The least divided of the family; leaves broad and obtuse; having but a few shallow notches on their margin, and without a decided footstalk. Branches overlapping one another. Sori marginal. Found by Dr. Dickie, near Aberdeen, in a sea-cave.

- ¶ Sori on the back in round masses. Indusium attached under them, and splitting above into hair-like segments, or fine threads.

Genus WOODSIA.

WOODSIA ILVENSIS. (*Oblong Woodsia*.) From 2 to 4 inches. Root tufted. Growing in masses. A main stem, bearing on each side oblong rather tapering, hardly-stalked, leaves, deeply and widely incised, and rounded at the incision, and hairy. Clothed on under surface with reddish chaffy scales. Sori scattered, and towards margin. Deciduous. Very rare. Northern. Not easy of cultivation. Of no particular beauty or interest intrinsically.

——— HYPERBOREA. (*Round-leaved Woodsia*.)

From 2 to 4 inches. Root tufted. Growing in masses. Leaves shorter, and rounded into little scallops at the incisions; the upper half of leaf being larger than the lower. Sori marginal. Deciduous. Very rare. Northern, &c., as the last, but of a little more interest.

- ¶ Sori oval on the inner surface of the Indusium. Indusium a projected continuation of the bleached reflexed margin of the leaf itself.

Genus ADIANTUM.

ADIANTUM CAPILLUS VENERIS. (*True Maiden Hair.*) From 4 to 13 inches. Root tufted. Growing in masses, but fronds separating and arching asunder. A perfect miniature tree. A thin, threadlike, purplish, stem, with even finer, same coloured, alternate, branches, bearing alternate, smooth but not polished, stalked, fan-shaped, delicate, leaves, either simply indented and notched in the barren, or turned over and prolonged into an indusium from their margin in the fertile, ones. Unique in its appearance and texture, and altogether unlike the tribe in general. Sori arranged in oval spots, longest across the Indusium, but soon uniting into a line. Evergreen. Not common. Moist caves and rocks near the sea, in the warmer parts of England and Ireland. Requires the shelter of a glass, but takes easily thereunder, and thrives well, &c., very graceful and ornamental.

¶ Sori on the back in oblique lines. Indusium attached on outer side.

Genus ASPENIUM.

Root tufted in all.

ASPENIUM SEPTENTRIONALE. (*Forked Spleenwort.*) From 1 to 4 inches. Growing in masses. A grass-like spike, dull green, except at base where brown-purple; divided near the top into two or three sharp-pointed, alternate, thicker, toothed, forks, or in the smaller fronds merely toothed itself, containing on underside two or more separate lines of Sori, which eventually throwing off their Indusia occupy the whole space. Evergreen. Rare. Northern. Requires a glass. Of very little comparative interest.

ALTERNIFOLIUM. (*Alternate-leaved Spleenwort.*) From 3 to 6 inches. Growing in masses. A single stalk, throwing out about half-way up several narrow, distant, alternate, deeply-notched, wedge-shaped, leaves; having two or three distinct lines of sori crowded on their underside, which eventually meet in centre. Evergreen.

Rare. Northern. Requires a glass. Of no particular interest.

RUTA MURARIA. (*Wall Rue.*) From 1 to 6 inches. Growing in tufts, and insinuating its wiry roots into the crevices and joints of walls; its tiny slender stalk sending out, about half-way up, little alternate branches, or on the larger plants secondary branches also; containing three or four toothed, long-stalked, wedge-shaped, leaves; occasionally however oval, smooth on edges, and not stalked: or again cut off abruptly, as it were at the top, and yet toothed. Sori eventually joining over whole leaf. Evergreen. Common. Takes pretty well, but fails sometimes, not only in excessive sunshine, but otherwise, probably from its roots being injured in removal, and from change of soil. A pretty little thing, but of no especial beauty.

TRICHOMANES. (*Common Maiden Hair.*) From 3 to 10 inches. Growing in circular masses. A shining, smooth, purplish, stem, bearing on each side almost from the bottom little round, or oval, dark dull green,

hardly stalked, opposite, leaves, slightly more or less notched. Evergreen. Sori as before. Common. Easy of cultivation, but like the last failing occasionally when taken from walls; more successful when taken from hedge-rows &c., and is there larger. Ornamental as a whole, but not peculiarly striking or curious.

VIRIDE. (*Green-stalked Spleenwort.*) From 2 to 8 inches. Growing in circular masses. Resembling the preceding, except that the stem is greener, the leaves lighter in colour, more deeply indented, alternate, and narrowed a trifle towards both ends. Evergreen. Sori when fullest and united not quite extended to the margin as in the last two. Rare. Northern. Not easy of cultivation unless under glass.

MARINUM. (*Sea Spleenwort.*) Usually from 6 to 12 inches, though occasionally taller. Coming out late, and growing in masses. A stem bearing on either side stalked, leathery, shining, dark green, somewhat oblong-egg-shaped, undivided, leaves, having a kind of elbow above next

the stem, and notched throughout except at base: about an inch long in middle of frond. Stem bare for about one third. Sori never uniting. Evergreen. Not uncommon on sea-coast. Removed with difficulty, like the last, from the adherency of its roots. Requires a glass, but then takes readily.

ADIANTUM NIGRUM. (*Black Spleenwort.*) From 3 to 4 inches when found on walls, from thence to 18 when on shady hedge-banks. Growing in rather circular masses. Very composite. Frond oblong-triangular, bearing about half-way up branches more or less alternate, oblong-triangular, having thick, leathery, shining, pointedly-toothed, irregularly-wedge-shaped, leaves, the larger ones stalked, and sometimes running into secondary branches. When on walls more rigid, and pointed, and yellowish instead of dark green, and the roots more fibrous, and extended. Does best when taken from banks; if from walls losing its difference under cultivation. Evergreen. Common. Rather variable

in form. Very hardy and ornamental. Sori very numerous, and eventually covering whole surface of leaf.

———— LANCEOLATUM. (*Lanceolate Spleenwort.*) From 4 to 6 inches, though occasionally taller. Less composite than the preceding, though sometimes mistaken for it. Growing in masses. Frond broadest in centre, and narrowing both ways: branches from about a third upward. Stalk of leaves finer. Lighter green. Branches shorter. Leaves simpler, less divided, spinous. Sori not so abundant, nearer margin, and more inclining to round. Evergreen. Not common. Chiefly on rocks by sea-side in South and West. Not easy of cultivation, requiring shelter, and a moist, warm, calm, atmosphere. Ornamental.

———— FONTANUM. (*Smooth Rock Spleenwort.*) From 3 to 4 inches. Growing in masses. Dark green. Frond erect, narrow, and tapering to both ends: rigid. First rudiments of branches beginning very low down. Stem having a thin, shadowy,

border on each side. Leaves short, stalked, broadly-wedge-shaped, deeply cleft, and with sharp spinous teeth. Evergreen. Rare, if yet existing in any natural locality. Perhaps in North. Requires considerable care and protection. An elegant little plant. Sori eventually over whole leaf.

FILIX FÆMINA. (*Lady Fern.*)

From 1 to 3 feet. Growing in masses. In its size and general character appearing rather to belong to the Genus *Aspidium*, to which it has sometimes been referred. The shape of the sori also would almost rank it intermediately, they being (more or less according to age, variations, &c.) like an elongated and rather straightened kidney, and therefore a mixture of the forms of both genera. Very composite. Fronds very light, feathery, drooping, succulent, and quickly shrivelling up when gathered, particularly when young, becoming hardier as the year advances. Branches alternate, commencing near the bottom. Leaves thereon very numerous, narrow, stalked, deeply and frequently di-

vided and toothed: in some a trifle more expanded and closer together; in others apart and very contracted; but in all slender. Sori appearing on the yet curled up head, and covering the under side of leaf so abundantly, though not uniting, that it is calculated that in twenty years a single plant might in its increase clothe the whole surface of the earth. Early cut down by the frosts of autumn. Very changeable in form, tint of colour, flexibility, &c., besides more distinct and rarer varieties, curled or tasselled, and so forth. Common, and easy of cultivation. Most graceful, elegant, and free growing.

PALMATUM. (*Mule Fern.*) From 2 to 4 inches. A simple undivided shoot or frond, of the appearance and texture of the Scolopendrium, only thinner in substance, heart-shaped below, but the indentation higher, with lateral projections on the lower half of each side, either rounded or triangular; oblong-triangular above, and bound by a raised bleached border all round the frond. Sori numerous, either in single oblique lines between midrib and edge of both centre and projected sides, indusium attached sometimes

outwardly and sometimes inwardly; or in double, indusia attached inwardly, and opening back to back. By some called Scolopendrium Hemionitis; for indeed, as thus connected with both, it can be strictly classed with neither genus. Found by a young friend of the writer's, growing wild in Essex, but not recognised by any authorities as one of our indigenous plants. Common in Portugal, Madeira, &c. Evergreen.

¶ Sori on the back in twin oblique lines. Indusia attached on outer side, lapping one over the other on inner.

Genus SCOLOPENDRIUM.

SCOLOPENDRIUM VULGARE. (*Common Heart's Tongue.*) From 6 to 18 inches. Root tufted. Growing in masses. A long, smooth, polished, dark-green, undivided, leathery, riband-like, shoot or frond, pointed at top, and heart-shaped at base, on a shortish shaggy stem. Sori in twin lines, covered by what looks like a single indusium, but really are two, one continued in its whole length partially over

the other, afterwards thrown back in opposite directions. Sori soon meeting, and looking also like only one, though always, on the frond being bent back, separating again down the middle. In early stages of its growth the folding over of the indusium can be clearly perceived through a lens. Evergreen. Common. Easy of cultivation. Its bold and simple form well suited to contrast with the so different and composite aspect of the majority of the other genera. Several varieties are found, crisped, indented, waved on the edges or forked, &c. rarer.

- ¶ Sori on the back of two longitudinal lines by the midrib. Indusia attached on outer side, but not connected with each other.

Genus BLECHNUM.

BLECHNUM BOREALE. (*Northern Hard Fern.*)

Barren fronds from 9 to 12 inches: fertile from 1 to 2 feet. Root tufted. Growing in circular masses. A long, leathery, frond tapering at both ends, cut on each side

into very narrow, undivided, smooth-edged, convex, obtuse, leaves, a trifle curved upwards, shortening towards bottom till they become mere rudimental projections, all at first appearing like a mere half-diamond till drawn out by growth. Fertile fronds fewer, erect, and rigid, and nearer the centre of the plant, their distinct leaves not beginning till much higher up the stem, considerably narrower, and further apart. Sori one line on each side of midrib along the whole leaf. Indusia fixed on outer side, and opening, as in the last, face to face, but separated by midrib, &c. Common in marshy, boggy, places. Comes up late. Slow of fructification. Not very satisfactory in cultivation. Best removed large, and in bearing. Curious and rather striking. Evergreen, when large and accustomed to the soil.

¶ Sori on the back, forming a continuous line along the margin. Indusium attached to the slightly-recurved edge of leaf.

Genus PTERIS.

PTERIS AQUILINA. (*Common Brake or Female Fern.*) Ordinarily from 3 to 4 feet, but rising occasionally as high as 9 or 10. Root long and fibrous, creeping horizontally, very succulent, and deeply embedded below, throwing up its single fronds at intervals, which soon cover large patches of ground. A tall, erect, tree-like, stem, velvety at the base, very brittle at first, afterwards tough and wiry, with simple leaves at top, becoming more and more composite downwards, till at last running into extended stem-like branches, with secondary branches on them, bearing long, narrow, smooth-edged, round-pointed, leaves, turned over a very little in their margins, themselves sometimes with obtuse projections, like the rudiments of a yet further multiplication of parts. Extremities, when young, brown, downy, and curled up. Branches more or less

opposite, and forming themselves in the primary ones, somewhat as described in Polyp. Dryopteris, at a bent angle. Sori along the border of every sinuosity of the leaf, but not always quite to its apex. Indusium fringed with hairs. Stalk, when cut across, offers the exact representation of an oak. Often destroyed by the spring frosts. Very difficult to transplant, and afterwards cultivate durably. It should be removed in large masses for the sake of the root, and only when in a torpid state. The grandest, and yet most common, of all, and *the* one whose "seed" was formerly said to do such wonders. Deciduous.

GLOSSARY.



- ACUMINATE**, tapering off to an acute point.
- ADNATE**, joined to that on which it grows by the whole breadth of leaf, &c., connected.
- ALLOSORUS**, the name used by some writers for the *Cryptogramma*.
- ALTERNATE**, leaves or branches succeeding each other interchangeably, first on one and then on the other side.
- ANASTOMOSE**, to run one into the other.
- ANNULATE**, ferns that have a ring round their seed-cases.
- ANNULUS**, the jointed ring of the seed-case.
- ANTHER**, the vessel containing the fertilising farina, affixed to the top of the stamen or barren filament of a flower or blossom.
- ARISTATE**, terminating in a bristle; awned.
- ARTICULATED**, jointed.
- ASPENIUM GERMANICUM**, the name used by some writers for the *Alternifolium*.
- ATHYRIUM**, a separate class assigned by some writers to the *Asplen*: *Filix Fœmina*.
- ATTENUATING**, tapering.

AURICLED, having a kind of projecting elbow at the base of the leaf.

AWNED, terminating in a bristle ; aristate.

AXIL, inner end of base on upper side ; angle formed by branch and stem.

AXILLARY, at the base on upper and inner side.

BIDENTATE, twice toothed.

BIFID, cleft in two.

BIPINNATE, having branches themselves pinnate, *i. e.* bearing distinct leaves separated from each other down to the stem.

BI-TRI—twice or thrice.

BLECHNUM SPICANT, name used by some writers for the Boreale.

CALICIFORM, like the calyx or cup of a flower.

CAPILLARY, fine thread or hair-like.

CAUDEX, the part under or on the ground, from which the frond springs ; popularly the root, to which the fibres or actual roots are attached.

CELLULAR, consisting of little cells or cavities.

CETERACH OFFICINARUM, name used by some writers for the Grammitis.

CILIATED, fringed with hair.

CIRCINNATE, coiled inwards, like a watch-spring.

CLAVATE, club-shaped, thinner at base, thicker upwards.

COMPRESSED, a cylinder, more or less flattened in its roundness.

CONCOLOROUS, of one uniform colour.

CONFLUENT, meeting ; running together ; uniting.

CONNATE, joined at the base.

CONNECTED, formed on the stem itself as the base of its entire width ; adnate.

CONVOLUTED, rolled together ; curled inwards.

CORDATE, heart-shaped.

CORIACEOUS, leathery.

COTYLEDONS, the perishable side-lobes of the seed, which furnish nourishment to the embryo plant.

CRENATE, }
CRENULATE, } scalloped ; notched ; indented.

CRENATURES, notches ; indentations.

CROWN, round mass of root projecting above ground.

CRYPTOGAMOUS, whose principle of fecundation is not apparent.

CUCULLATE, shaped like a hood, cowl, or bladder.

CUNEATE, wedge-shaped, widening upwards.

CYLINDRICAL, formed like a round tube.

DECOMPOUND, divided yet further beyond tripinnate.

DECURBENT, tapering off without any distinct leaf-stalk into junction with, and thickening, the stem or branch.

DEFLEXED, bending, or curved, downwards.

DEHISCING, bursting open.

DELTOID, trowel or triangular spear-shaped.

DENTATE, toothed.

DEPAUPERATED, lessened ; contracted.

DIAPHANOUS, transparent.

- DICHOTOMOUSLY, forkedly, into two branches.
- DIGITATE, like the human fingers.
- DISTICHOUS, two-rowed or ranked.
- DORSAL, on the back.
- DORSIFEROUS, bearing seed on the back.
- EVERGREEN, remaining in leaf during the winter,
whether changed in its colour or not.
- EXANNULATE, ferns not having a ring round their
seed-cases.
- EXsertED, projected beyond the margin of its conti-
nent.
- FALCATE, shaped like a reaping-hook.
- FILIFORM, thread-shaped.
- FLABELLIFORM, fan-shaped.
- FLEXUOUS, winding; crooked; zigzag.
- FROND, the main stem with its branches, leaves, &c.
- FRUCTIFICATION, } The seed, seed-vessels, and their
FRUIT, } appendages.
- FURCATE, forked.
- GIBBOUS, bulged out.
- GLABROUS, bald; smooth.
- GLAUCCUS GREEN, hoary, grey, green, like the back
of a cabbage-leaf.
- GRUMOUS, thick; clotted.
- GYRATE, curled up.
- HABITAT, the native-home of a plant, where it grows
indigenously.
- HERBACEOUS, succulent.

HYBRID, a mixed plant composed of two species.

HYBRIDIZATION, the commingling or running of plants one with the other.

HYMENOPHYLLUM UNILATERALE, name adopted by some writers for the *Wilsoni*.

IMBRICATED, laid one under the other, like tiles.

IMMERSED, sunk within the margin of its continent.

INDUSIUM, the cover over the mass of seed-cases.

INVOLUCRE, used by some writers for *Indusium*; or specially as regards the *Woodsia*, and the cups of the *Hymenophyllum* and *Trichomanes*.

LACINIATED, jagged.

LANCEOLATE, lance-shaped or narrow-oblong-triangular.

LASTREA, the name used by some writers for that portion of the genus *Aspidium* which has kidney-shaped *Indusia*.

———— **FÆNISSECH**, the *Aspidium Recurvum*.

LATO—in composition, widely; broadly.

LIGULATE, linear; shaped like a paper-cutter.

LINEAR, strap-shaped, or like a dinner-knife.

LOBED, divided nearly half-way down into scallops, or parts rounded at their edges.

LOBES, scalloped portions of leaf between the divisions, sometimes used for the leaf itself.

LOAM, fat, unctuous, earth; marl.

LUNATE, crescent-shaped.

MEMBRANEOUS,	}	semi-transparent, and of the texture of skin or very thin parchment (<i>membrana</i>).
MEMBRANOUS,		
MEMBRANACEOUS,		

MONOPHYLLOUS, single-leaved ; undivided ; entire.

MONSTER, an anomalous variety.

MUCRONATE, ending abruptly in a sharp point.

OBOVATE, inversely egg-shaped, with the small end downwards.

OBSOLETE, contracted ; indistinct ; imperfect.

OPPOSITE, springing from the same level on both sides of the stem or branch.

ORBICULAR, round ; globe-shaped.

OVATE, egg-shaped.

PALEACEOUS, chaffy ; husky.

PANICLE, an irregular bunch of flowerets.

PECTINATE, apart, like the teeth of a comb.

PEDICEL, a little leaf-stalk.

PEDICELLATE, having a little stalk.

PELTATE, target-shaped.

PENTAGONAL, five-angled or cornered.

PERSISTENT, abiding in leaf during the winter.

PETIOLE, leaf-stalk.

PETIOLED, }
PETIOLATED, } Stalked.

PHÆNOGAMOUS, whose principle of fecundation is apparent.

PINNA, the primary lateral offshoot from the stem, whether perfect leaf or branch ; secondary, the same on the branches.

PINNATE, having either branches or leaves distinctly separate from each other down to the stem itself.

PINNATIFID, having mere scallops or incomplete leaves, their divisions not reaching down to the stem itself.

PINNULE, the leaf on a branch.

PISTIL, the fertile filament or little column in the interior of a flower or blossom.

POLLEN, the fecundating farina of a plant.

POLYSTICHUM, the name used by some writers for that portion of the genus *Aspidium* which has round *Indusia*.

PROCUMBENT, lying down on the soil; not springing upwards.

PUBESCENCE, down or woolly hair.

PUBESCENT, clothed with soft wood, down, or hair.

QUADRATE, squared.

RACEME, a bunch of irregular flowrets.

RACHIS, the main stem from the branches upwards, sometimes used for the whole stem: secondary or partial, the same on the branches.

RECEPTACLE, the portion of the veins to which the seed-cases are attached.

REFLEXED, turned or curved back.

RENIFORM, kidney-shaped.

RHIZOMA, the part of the Fern under or on the ground from which the frond springs, popularly called the root, and to which the fibres or real roots are attached; the caudex.

RHOMBOIDAL, diamond-shaped, only rather broader one way than the other.

SECUND, pointing one way.

SEGMENTS, divided portions of leaf; lobes.

SERRATE, toothed like a saw.

SERRATURES, saw-like indentations.

SESSILE, tapering off without any distinct leaf-stalk, and merging in the stem or branch.

SILICIOUS, composed of hair-like substance.

SINUATE, } bending; crooked; serpentine.
SINOUS, }

SINUS, inner end of indentation.

SORI, aggregated mass of thecæ or seed-cases.

SPINULOSE, spinous; bristly.

SPORES, seeds.

STAMEN, the barren filament or thread-like column in the interior of a flower or blossom.

STIGMA, the point of the pistil or fertile filament in the interior of a flower or blossom, receiving the farina.

STIPES, the main stem up to the branches; secondary or partial, the same on the branches.

STOMATA, the respiratory pores or openings.

STRIATED, scored or furrowed.

SUB—prefixed, acts as a diminutive; partially, in a less degree.

TERETE, columnar; cylindrical; round.

TERNATE, three-branched or leaved at the same point.

THECA, seed-vessel or case.

TORTUOUS, twisting; winding; crooked.

TRAPEZIFORM, having four unequal sides.

TRICHOMANES Radicans, used by some writers for the *Brevisetum*.

TRIDENTATE, triply-toothed.

TRIFID, cleft into three.

TRIPINNATE, having secondary branches, themselves pinnate.

TRUNCATE, lopped off abruptly.

UMBELLIFEROUS, where a number of stalks springing from one centre produce a round of flowrets above, umbrella-fashion.

UNILATERAL, growing or bearing all on one side only.

URCEOLATE, pitcher-shaped.

VASCULAR, consisting of, or full of, vessels.

VEINS, the fibres, nerves, or ridges, of the leaf.

VENATION, mode of disposition or arrangement of the veins or nerves.

VERNATION, mode of growth of young developing frond.

WINGED, having a thin filmy border like a shadow.

WOODSIA ALPINA, name used by some writers for the *Hyperborea*.

N.B.—In compound terms the first qualifies the second; or it may be sometimes, as in general Botany, the first applies to the base, the second to the apex, of the frond.

